IN THE EUROPEAN PATENT OFFICE INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY (IPEA/EP)

Applicant(s): DOW GLOBAL TECHNOLOGIES INC.
(Webin Liang et al.)

International Application No.: PCT/US2004/039823

Filed: 29 November 2004

For: FILMS WITH SUPERIOR IMPACT RESISTANCE AND IMPROVED CATASTROPHIC FAILURE RESISTANCE UNDER HIGH STRAIN RATE

REFERENCE: 63385B

Authorized Officer: D. Hutton

RESPONSE TO WRITTEN OPINION

Dear Sir/Madam:

In response to the first Written Opinion by the International Preliminary Examining Authority mailed on March 14, 2005 .

Please amend the claims as indicated. Replacement pages 9-11 are attached.

1. A stretch film having three or more layers wherein:

A) at least one layer comprises a polyethylene characterized as having:

i) a density from about 0.9 g/cc to about 0.96 g/cc;

ii) a melt index from about 0.5 g/10 minutes to about 10 g/10 minutes, measured in accordance with ASTM D 1238, condition 190°/2.16 kg; and

iii) a molecular weight distribution from about 2.5 to about 4.5; and

B) wherein at least one non-surface layer comprises at least one propylene polymer; and

C) wherein the stretch film is characterized as having an ultimate stretch of at least 200% , a Dart A of at least 430 gms/mil and a CF of 5% or less.

14. ~~A~~The ~~-~~stretch film of claim 1~~comprising at least one layer comprising an ethylene polymer~~, wherein the film has a tensile stress at break of at least 5000 psi ~~and an ultimate stretch of at least 200% , and a CF of 5% or less~~.

Claim 1 was amended by combining original claims 1, 2, 10 and 11. The descriptor "non-surface" for the layer comprising ethylene was deleted as an unnecessary limitation, as shown by (for example) original claim 18. Accordingly no new matter is added, and the entry of the amendments is proper.

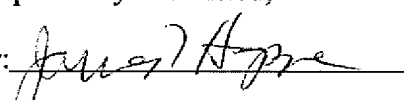
In the Written Opinion, the Examiner first objected to the "CF" value as lacking clarity as according to the Examiner it required the use of a particular test apparatus specific to Highlight Industries. First of all, the Applicants contest the assertion that a particular apparatus available only from a particular supplier is mandated by the claims. At page 3, lines 21-25, "CF" is defined to mean the ratio of ultimate stretch percentage minus the catastrophic failure stretch percentage divided by the ultimate stretch percentage. These terms (i.e. the ultimate stretch percentage and the catastrophic failure stretch percentage) are known in the art, and could be determined using any suitable method. The instrument from Highlight Industries is simply the most well-known commercially available apparatus for determining these values. Moreover, even if these values were only obtainable using "a particular test apparatus specific to Highlight Industries" as indicated by the Examiner, the applicants fail to see how this results in a lack of clarity, as it would be clear to a practitioner in the art what that apparatus is.

The claims of the present application have been amended to now require that the films of the present invention all having a non-surface layer comprising polypropylene. This limitation was always present in independent claims 18, 19 and 22, as well as dependent claims 11, 16 and 17, and as such, is not new matter. None of the references cited by the Examiner have a propylene based polymer in a non-surface layer with the exception of EP 0785 065. This reference, however, does not contain any layer having the particular polyethylene material recited in the claims. Moreover, this reference is not directed towards stretch films like the present application. This is readily apparent at the last two lines of page 7, line 57 which recites, "as seen from these graphs, the film of this invention (Example 1) provides the best holding force, i.e., it stretches the least". Clearly this passage teaches away from using its formulations as a stretch film.

The Examiner has also indicated that the claims were formulated as a "desiderata". With the accompanying amendments, the claims all now recite compositional details which lead to achieving the characterizing parameters recited in the claims. As such, it is respectfully submitted that the Examiner's objection has been resolved.

Given the amendments and remarks, the Applicant's now courteously request a favorable indication of patentability.

Respectfully submitted,

By: 

James T. Hoppe
Registration No. 35,899
Phone No.: (979) 238-9039

October 13, 2005
P.O. Box 1967
Midland, MI 48641-1967

JTH/mfg

WHAT IS CLAIMED IS:

1. A stretch film having three or more layers wherein:

A) at least one layer comprises a polyethylene characterized as having:

i) a density from about 0.9 g/cc to about 0.96 g/cc;

ii) a melt index from about 0.5 g/10 minutes to about 10 g/10 minutes, measured in accordance with ASTM D 1238, condition 190°/2.16 kg; and

iii) a molecular weight distribution from about 2.5 to about 4.5; and

B) wherein at least one non-surface layer comprises at least one propylene polymer; and

C) wherein the stretch film is characterized as having an ultimate stretch of at least 200% , a Dart A of at least 430 gms/mil and a CF of 5% or less.

2. (Cancelled)

3. The stretch film of Claim 1 wherein the film comprises at least 50 % by weight polyethylene.

4. The stretch film of Claim 1 wherein the film is in the range of 0.4 to 3 mil in thickness.

5. The stretch film of Claim 4 wherein the film is in the range of 0.7 mils to 3 mils.

6. The stretch film of Claim 1 having a Dart A greater than 570 gms/mil.

7. The stretch film of Claim 1 having a Dart A greater than 700 gms/mil.

8. The stretch film of Claim 1 having a CF of 3% or less.

9. The stretch film of Claim 1 having an ultimate stretch of at least 300%.

10. (Cancelled)

11. (Cancelled)

12. The stretch film of Claim 1 comprising a homogeneous polymer component.

13. The stretch film of claim 1 wherein the film is made at an output rate of at least about 6 pounds/hour/inch of die width.

14. The stretch film of claim 1, wherein the film has a tensile stress at break of at least 5000 psi.

15. The stretch film of Claim 14 further characterized as having a Dart A of at least 430 gms/mil

16. (Cancelled)

17. (Cancelled)

18. A stretch film having an ultimate stretch of at least 200% , a Dart A of at least 430 gms/mil and a CF of 5% or less, and comprising at least three layers, wherein a non-skin layer comprises a propylene polymer, and at least one other layer comprises an ethylene polymer composition, wherein the ethylene polymer composition comprises:

(A) from about 10 percent (by weight of the total composition) to about 95 percent (by weight of the total composition) of at least one ethylene interpolymer having:

(i) a density from about 0.89 g/cm^3 to about 0.935 g/cm^3,

(ii) a melt index (I_2) from about 0.001 g/10 minutes to about 10 g/10 minutes, preferably from about 0.001 g/10 minutes to about 1 g/10 minutes, more preferably from about 0.001 g/10 minutes to about 0.5 g/10 minutes,

(iii) a slope of strain hardening coefficient greater than or equal to 1.3, and

(iv) a Composition Distribution Index (CDBI) greater than 50 percent; and

(B) from about 5 percent (by weight of the total composition) to about 90 percent (by weight of the total composition) of at least one ethylene polymer having a density from about 0.93 g/cm^3 to about 0.965 g/cm^3 and a linear polymer fraction, as determined using temperature rising elution fractionation (TREF).

19. A stretch film having an ultimate stretch of at least 200% , a Dart A of at least 430 gms/mil and a CF of 5% or less, and comprising at least three layers, wherein a non-skin layer comprises a propylene polymer, and at least one other layer comprises an ethylene polymer composition, wherein the ethylene polymer composition comprises:

(A) from about 10 percent (by weight of the total composition) to about 100 percent (by weight of the total composition) of at least one ethylene interpolymer having:

(i) a density from about 0.89 g/cm^3 to about 0.935 g/cm^3,

(ii) a melt index (I_2) from about 0.001 g/10 minutes to about 10 g/10 minutes,

(iii) a molecular weight distribution, Mw/Mn, from about 2 to about 4, and

(iv) a Composition Distribution Index (CDBI) greater than 50 percent; and

(B) optionally, from about 5 percent or less (by weight of the total composition) to about 90 percent (by weight of the total composition) of at least one ethylene polymer having a density from about 0.93 g/cm^3 to about 0.965 g/cm^3 and a linear polymer fraction, as determined using temperature rising elution fractionation (TREF).

20. The stretch film of claim 19 wherein (A) has a melt index from about 0.001 g/10 minutes to about 1 g/10 minutes.

21. The stretch film of claim 19 wherein (A) has a melt index from about 0.001 g/10 minutes to about 0.5 g/10 minutes.

22. A stretch film having an ultimate stretch of at least 200% , a Dart A of at least 430 gms/mil and a CF of 5% or less, and comprising at least three layers, wherein a non-skin layer comprises a propylene polymer, and at least one other layer comprises an ethylene polymer composition, wherein the composition comprises:

(A) an interpolymer having a narrow molecular weight distribution and a narrow composition distribution breadth index (CDBI), defined as the weight percent of the polymer molecules having a comonomer content within 50 percent of the median total molar comonomer content, which is greater than about 50 percent and a degree of branching less than or equal to 2 methyls/1000 carbons of about 15 percent (by weight) or less and having an aluminum residue content of less than or equal to about 250 ppm present in the interpolymer composition, said interpolymer A being present in an amount of from about 15 to about 85% by weight based on the combined weight of Components A and B; and

(B) an interpolymer having a broad molecular weight distribution and a broad composition distribution and a degree of branching less than or equal to 2 methyls/1000 carbons of about 10 percent (by weight) or more and a degree of branching greater than or equal to 25 methyls/1000 carbons of from about 25 percent (by weight) or less present in the interpolymer composition, said interpolymer B being present in an amount of from about 15 to about 85% by weight based on the combined weight of Components A and B.

23. The film of any of claims 18-22, wherein the ethylene polymer composition comprises a skin layer.